

I. Amendments to the Claims

This listing of claims replaces without prejudice all prior versions and listings of claims in the application:

Listing of Claims:

1-29. (Canceled)

30. (New) An apparatus for assaying effects of test formulations on at least one test membrane, comprising:

a first plate including

a plurality of first wells, the first wells configured so that a first end of each of the first wells is sealable with the test membrane, the first wells each including openings at a second end, at least a portion of the first wells arranged linearly in a row, and

a generally cylindrical plate channel that runs generally parallel to the row of the first wells adjacent to the openings thereof; and

a generally cylindrical rod mounted in the plate channel of the first plate and extending lengthwise along a longitudinal axis, the rod including a plurality of rod channels that are generally perpendicular to the longitudinal axis, each of the rod channels in general alignment with a respective one of the first wells in the row, the rod rotatable about the longitudinal axis between an open position in which the rod channels allow the test formulations to be introduced or removed through the openings of the first wells in the row, and a closed position in which the rod generally seals the openings of the first wells in the row.

31. (New) The apparatus of claim 30, further comprising a second plate configured for assembly with the first plate so that the test membrane is sandwiched between the first and second plates.

32. (New) The apparatus of claim 31, wherein the second plate comprises a plurality of second wells, each of the second wells in general alignment with a respective one of the first wells on the opposite side of the test membrane.

33. (New) The apparatus of claim 32, wherein each of the second wells comprise a first end sealable with the test membrane, and openings at a second end through which test formulations may be introduced or removed.
34. (New) The apparatus of claim 33, further comprising mechanical means for sealing the openings of the second wells after the test formulations have been introduced or removed through the openings.
35. (New) The apparatus of claim 34, wherein the mechanical means for sealing the openings comprise at least one selected from the group consisting of: magnetic or magnetizable spheres; one or more rotating rods; one or more sealing plates; spring-loaded balls; and sealing balls affixed to plungers.
36. (New) The apparatus of claim 33, further comprising a plurality of electrodes, each of the electrodes associated with a respective one of the first and second wells when assembled so that each of the electrodes contacts the test formulation in the respective one of the wells.
37. (New) The apparatus of claim 33, further comprising a circuit wiring plate mountable to one of the first and second plates, the circuit wiring plate including a plurality of electrodes, each of the electrodes associated with a respective one of the wells when assembled so that each of the electrodes contacts the test formulation in the respective one of the wells.
38. (New) The apparatus of claim 37, wherein the circuit wiring plate comprises an array of holes through each of which the test formulations may be introduced or removed, thereby providing a means of adding or abstracting samples from the wells.
39. (New) A method comprising using the apparatus of claim 30 to assay effects of the test formulations on barrier properties of the at least one test membrane.
40. (New) An apparatus for assaying effects of test formulations on at least one test membrane, comprising:

a donor plate including a plurality of donor wells arranged in an array, each of the donor wells including a first end sealable with the test membrane, and top openings at a second end through which the test formulations may be introduced or removed; and

a receptor plate mountable to the donor plate to sandwich the test membrane therebetween, the receptor plate including a plurality of receptor wells arranged in an array, each of the receptor wells including a first end sealable with the test membrane, and sealable bottom openings at a second end through which the test formulations may be introduced or removed.

41. (New) The apparatus of claim 40, further comprising a rod mounted in the receptor plate, the rod configured to seal the bottom openings of at least a portion of the receptor wells.

42. (New) The apparatus of claim 41, wherein the rod is movable between an open position allowing the test formulations to be introduced or removed through the bottom openings and a closed position in which the rod generally seals the bottom openings.

43. (New) The apparatus of claim 42, wherein the rod comprises a plurality of rod channels each alignable with a respective one of the receptor wells to allow the test formulations to be introduced or removed through the bottom openings when in the open position.

44. (New) The apparatus of claim 43, wherein the rod is rotatable between the open and closed positions.

45. (New) The apparatus of claim 40, wherein the openings of at least a portion of the donor and receptor wells are sealable with magnetic or magnetizable balls, whereby the test formulations may be retained in the wells independent of the orientation of the apparatus.

46. (New) The apparatus of claim 40, wherein the openings of at least a portion of the donor and receptor wells are sealable with at least one of: one or more sealing plates; spring-loaded balls; and sealing balls affixed to plungers.

47. (New) The apparatus of claim 40, wherein at least a portion of the donor and receptor wells comprise a collapsible element and a one-way valve, whereby gas or liquid may be expelled from the receptor wells through the one-way valve and cause the collapsible element to

correspondingly collapse so that the receptor wells remain generally full of the test formulation and without the introduction of air bubbles.

48. (New) The apparatus of claim 40, further comprising a plurality of electrodes arranged in an array, each of the electrodes associated with a respective one of the donor wells when assembled so that each of the electrodes contacts the test formulation in the respective one of the donor wells.

49. (New) The apparatus of claim 40, further comprising a circuit wiring plate mountable to the donor plate, the circuit wiring plate including a plurality of electrodes arranged in an array, each of the electrodes associated with a respective one of the donor wells when assembled so that each of the electrodes contacts the test formulation in the respective one of the donor wells.

50. (New) The apparatus of claim 49, wherein the circuit wiring plate comprises an array of holes through each of which the test formulations may be introduced or removed, thereby providing a means of adding or abstracting samples from the donor wells.

51. (New) The apparatus of claim 40, wherein a one of the donor plate and the receptor plate comprises a set of slots configured for allowing a blade to cut the test membrane when sandwiched between the donor and receptor plates.

52. (New) The apparatus of claim 51, wherein the other of the donor plate and the receptor plate comprises a set of grooves generally arranged in mirror image fashion to the slots, so that the blade introduced through the slots can pass completely through the test membrane and into the grooves.

53. (New) The apparatus of claim 40, wherein the donor and receptor plates each comprise a set of slots configured for allowing a blade to cut the test membrane when sandwiched between the donor and receptor plates, so that the blade can be introduced through the slots from either side of the test membrane.

54. (New) The apparatus of claim 40, further comprising a plurality of O-rings mounted in annular grooves of the donor and receptor plates adjacent the first ends of each of the donor and

receptor wells, the O-rings configured to ensure sealing at perimeters of each of the donor and receptor wells at the test membrane.

55. (New) A method comprising using the apparatus of claim 40 to assay effects of the test formulations on barrier properties of the at least one test membrane.

56. (New) A method of assaying effects of at least one test formulation on at least one test membrane, comprising:

assembling a donor plate and a receptor plate to sandwich the test membrane therebetween, the test membrane generally sealing a plurality of donor wells of the donor plate and a plurality of receptor wells of the receptor plate;

introducing the test formulation to the receptor wells so that the test formulation contacts the test membrane from the receptor wells;

sealing bottom openings of the receptor wells; and

introducing the test formulation to the donor wells so that the test formulation contacts the test membrane from the donor wells.

57. (New) The method of claim 56, further comprising inverting an orientation of the assembled donor and receptor plates.